

MOORE TOWNSHIP
(Corunna)

**water pollution
control plant**

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ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Moore Local Advisory Committee,
Township of Moore.

Gentlemen:

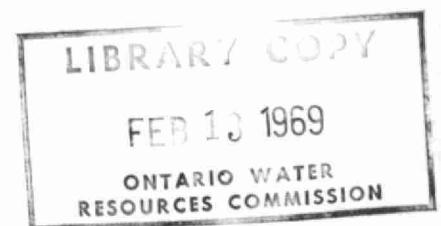
We are pleased to submit to you the 1967 Operating Summary for the
Moore Township Water Pollution Control Plant, OWRC Project No.
61-S-88.

It is hoped that our joint participation in efforts to combat water pollution
will have even more success in the coming year.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly".

D. S. Caverly,
General Manager.





ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

TELEPHONE 365-

J. A. VANCE, LL.D.
CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER
W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am happy to present you with the 1967 Operating Summary for the Moore Township Water Pollution Control Plant, OWRC Project No. 61-S-88.

The report offers a concise summary of operating data for the year and comparisons with previous years where these are applicable and significant.

Yours very truly,

A handwritten signature in cursive script, reading "D. A. McTavish".

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.



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FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

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MOORE TOWNSHIP
(CORUNNA)
water pollution control plant

operated for

THE TOWNSHIP OF MOORE

by the

ONTARIO WATER RESOURCES COMMISSION

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VICE-CHAIRMAN: J. H. H. Root, M. P. P.

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DIVISION OF PLANT OPERATIONS

DIRECTOR: D. A. McTavish

Assistant Director: C. W. Perry
Regional Supervisor: P. J. Osmond
Operations Engineer: R. E. Brown

801 Bay Street Toronto 5

'67 REVIEW

The total operating cost for 1967 was \$14,853.48, resulting in an 8.25% decrease in the cost per million gallons treated over the 1966 cost. The 1967 costs were higher than the 1966 costs due to a large increase in repairs and maintenance and generally higher costs. The cost per lb. of BOD removed was 24 cents which is the same as in 1966.

In general, operation of the plant was similar to that in previous years. The low flows and loading have continued to make use of more than one half of the plant unnecessary. The spare aeration tank was used to store storm water flows.

The average daily flow to the plant was 116,000 gallons per day representing 36.2% of the total design capacity and 72.4% of the capacity of the portion of the plant in use. There was a flow increase of 36.5% over the 1966 results. It is obvious from the high flows approaching design flow rates that occur during periods of heavy rain, that there are numerous storm water connections to the sewers. More strict enforcement of the town sewer use bylaws will be necessary if these storm flows create an operating problem.

The raw sewage average strengths of 154 ppm BOD and 195 ppm SS were slightly below the 1966 averages. Average reductions of 95.6% BOD and 95.1% SS were achieved. An average of 4.4 cubic feet of grit was removed per million gallons of sewage. This grit removal rate is above average.

The annual inspection of the sewer system during the early fall months did not disclose any problems.

The Corunna plant is operated by Mr. S. Bechard. It is possible for one capable operator, with supervision and technical assistance from the OWRC head office staff, to maintain and efficiently operate a project of this size. A part-time assistant is used for weekend relief, holidays, sickness, attendance at training courses, or when additional assistance is required for inspecting and cleaning sewers.

Supervision of the plant is based on a total of 40 hours per week, 36 hours occurring during the period from Monday to Friday inclusive and two hours each on Saturday and Sunday.

During the past year, Mr. Bechard attended the Chief Operators' Conference held in Toronto.

PROJECT COSTS

NET CAPITAL COST (Estimated)	\$762,379.92
DEDUCT - Portion Financed by CMHC (Estimated)	<u>300,550.70</u>
Long Term Debt to OWRC	<u>\$461,829.22</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967	\$ <u>41,336.02</u>
Net Operating	\$ 14,853.48
Debt Retirement	9,320.00
Reserve	4,339.59
Interest Charged	26,033.86
TOTAL	\$ <u>54,546.93</u>

RESERVE ACCOUNT

Balance at January 1, 1967	\$ 14,628.95
Deposited by Municipality	4,339.59
Interest Earned	<u>911.42</u>
	\$ 19,879.96
Less Expenditures	<u>463.30</u>
Balance at December 31, 1967	\$ <u>19,416.66</u>

MONTHLY OPERATING COSTS

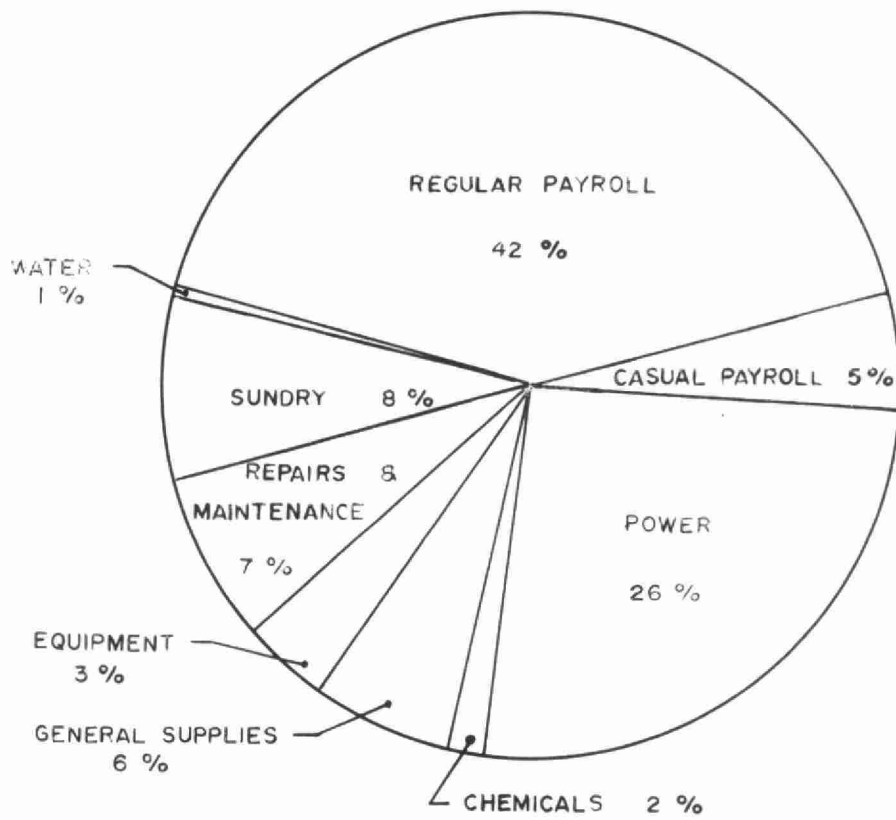
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER
JAN	915.46	444.60		318.98				104.18	47.70	
FEB	894.96	415.36		302.88		4.40	152.20	7.81	12.31	
MARCH	1,675.22	751.00	87.54	317.18		125.00	79.91	319.47	(32.26)	27.38
APRIL	1,211.28	456.26	109.33	287.68		105.45	175.00	53.91	23.65	
MAY	1,191.60	415.05	36.75	337.33	108.29	207.42	50.57	23.84	12.35	
JUNE	1,089.22	508.67	99.50	352.48		50.93	20.62		28.94	28.08
JULY	1,209.79	472.05	101.65	330.68		50.22		106.19	149.00	
AUG	1,229.77	515.02	143.95	351.28		51.75		105.42	62.35	
SEPT	1,339.86	738.55	80.88	279.38		80.33	49.93	52.92	24.09	33.78
OCT	1,129.40	477.18	66.02	298.48	108.29	84.24			95.19	
NOV	1,596.74	515.53	10.50	378.38		100.20		28.00	564.13	
DEC	1,370.18	470.04	6.00	328.88		55.81		316.68	165.39	27.38
TOTAL	14,853.48	6179.31	742.12	3883.61	216.58	915.75	528.23	1118.42	1152.84	116.62

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$200.16
BRACKETS INDICATE CREDIT

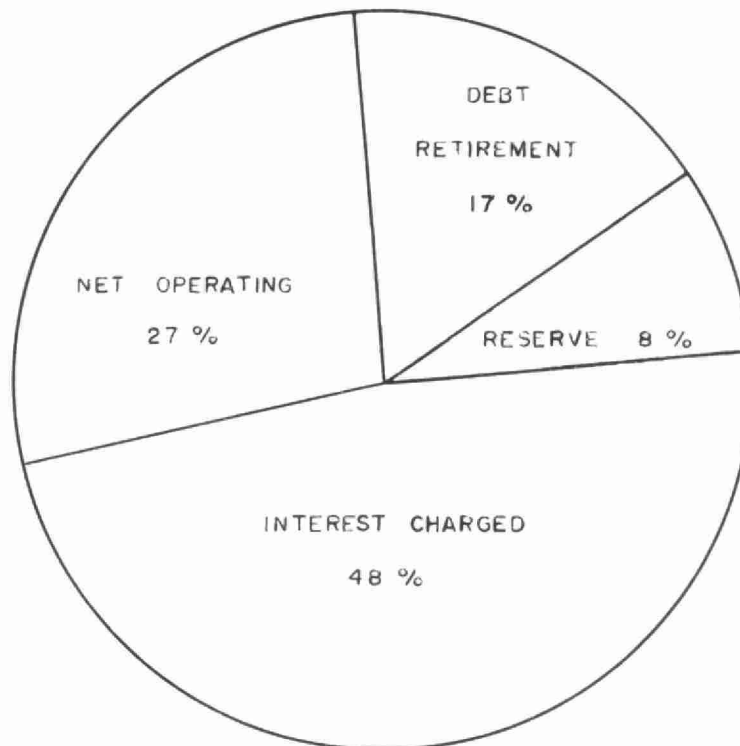
YEARLY OPERATING COSTS

YEAR	M. G. TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1964	32.020	\$ 10546.67	\$ 329.38	17 CENTS
1965	32.622	12595.65	386.11	21 CENTS
1966	31.102	11851.63	381.06	24 CENTS
1967	42.486	14853.48	349.61	24 CENTS

1967 OPERATING COSTS



TOTAL ANNUAL COST



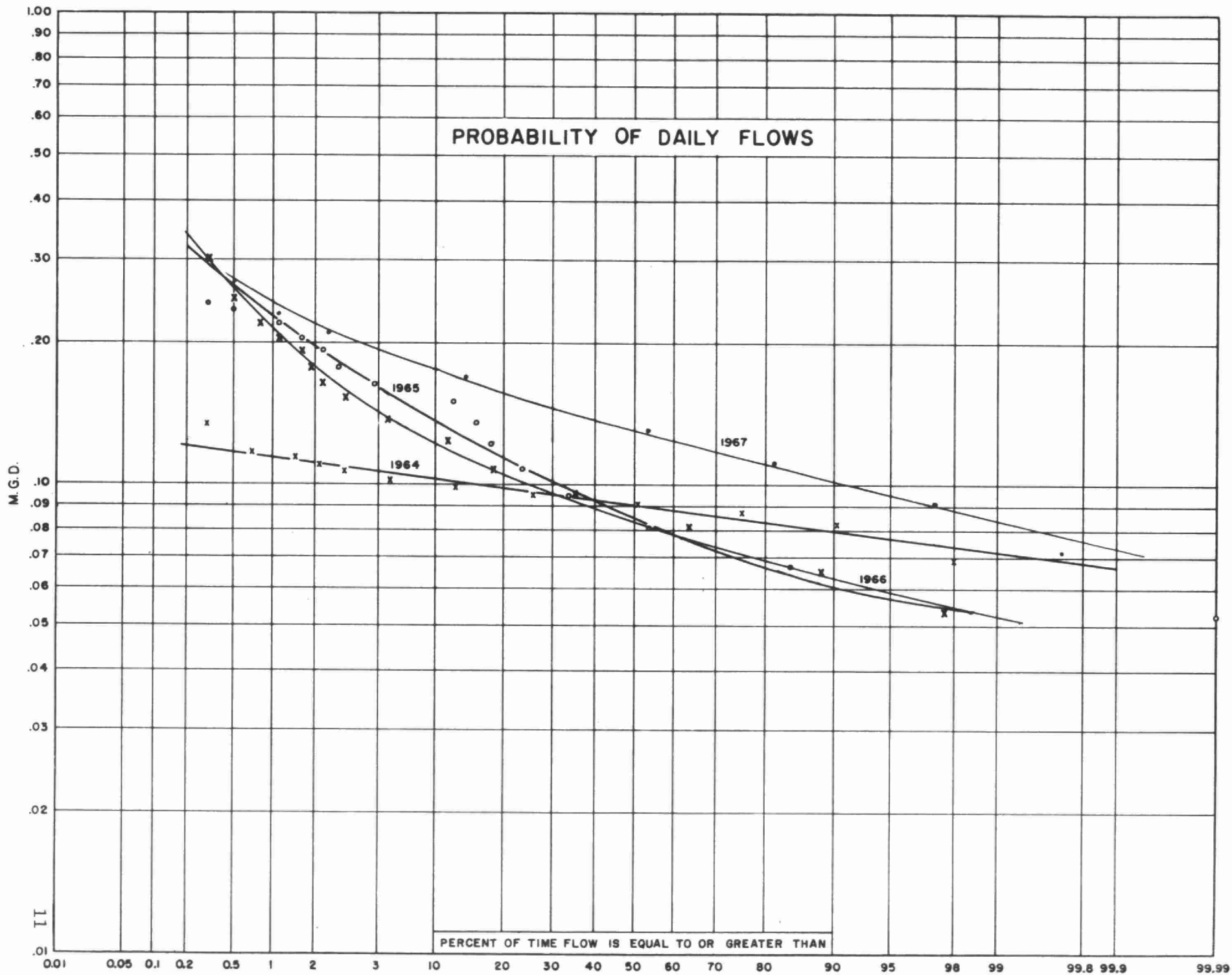
Process Data

GENERAL

The following data provide information regarding the flows treated by the plant, the degree of treatment achieved and the chlorine required for disinfection.

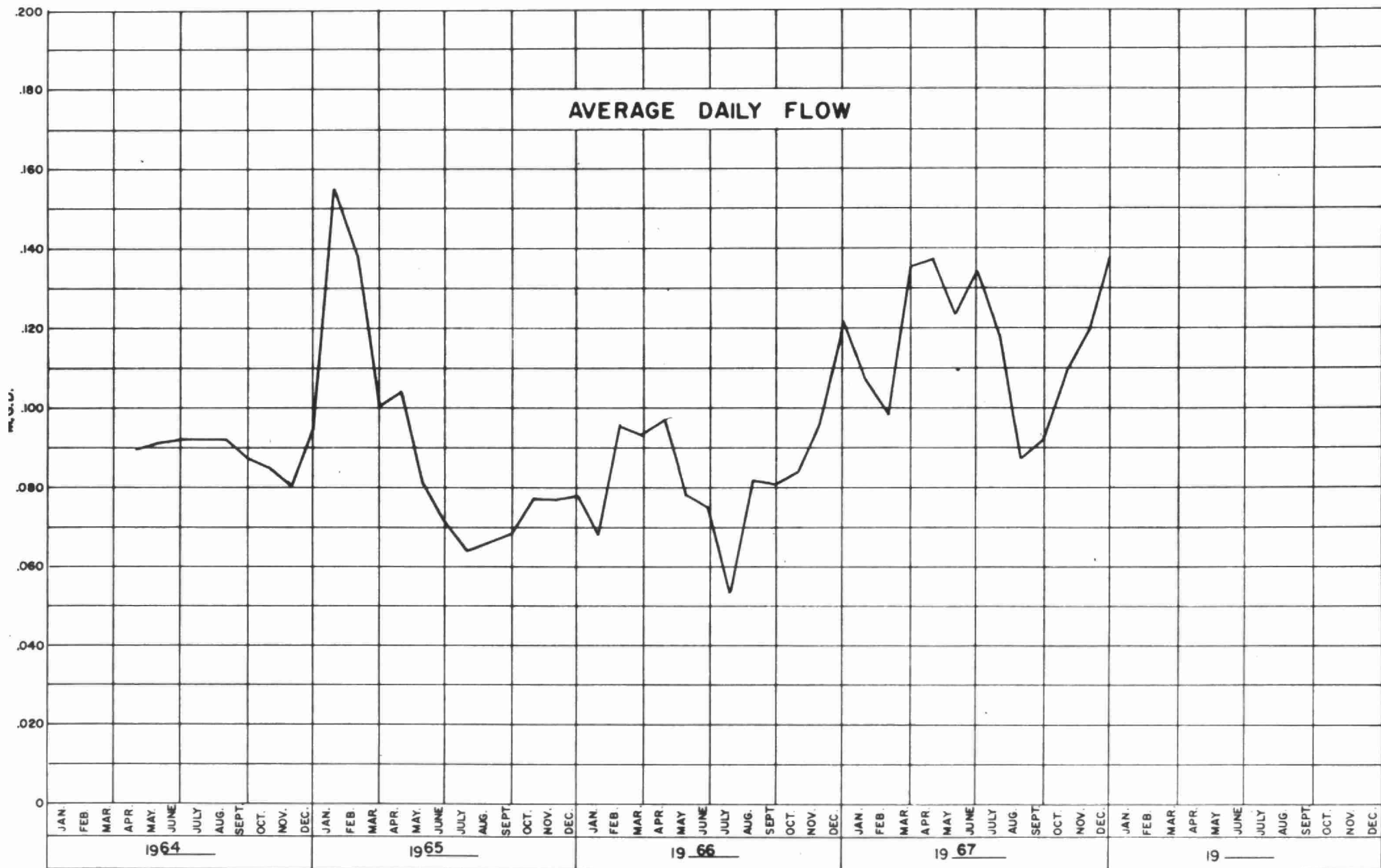
FLOW

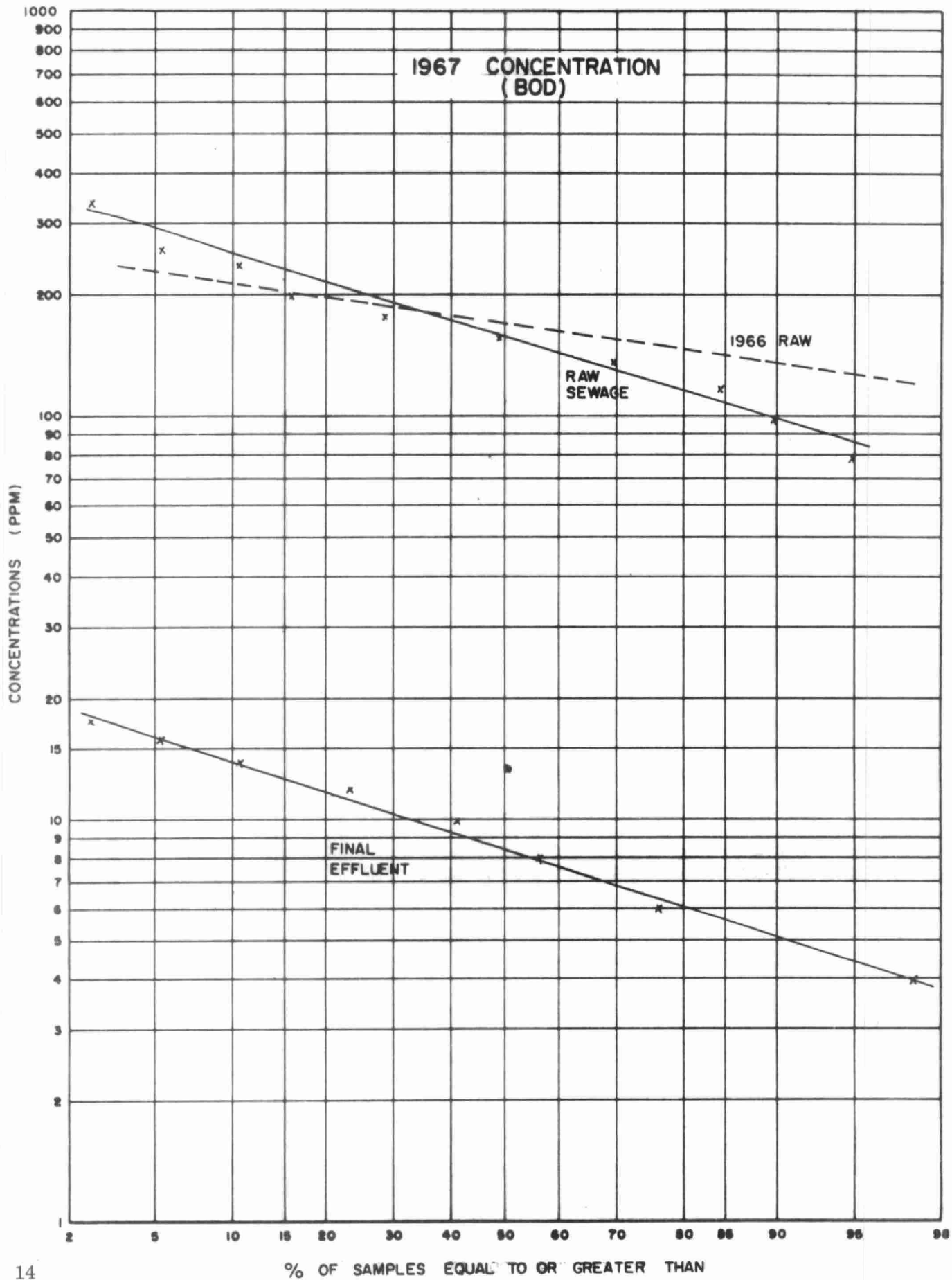
During 1967, a total of 42,486 million gallons was treated at the plant. This represents an average daily flow of 116,400 gallons per day. The maximum day flow received was 266,000 gallons in December. This particularly high flow was due to severe rains during the day. The maximum flow for one month was 4.285 million or 138,000 gallons per day and occurred in December. Based on the month of December the plant operated at 43.2% of design capacity. On the basis of the year's average flow the plant operated at 36.2% of design capacity. The total flow for the year was 36.5% higher than in 1966.

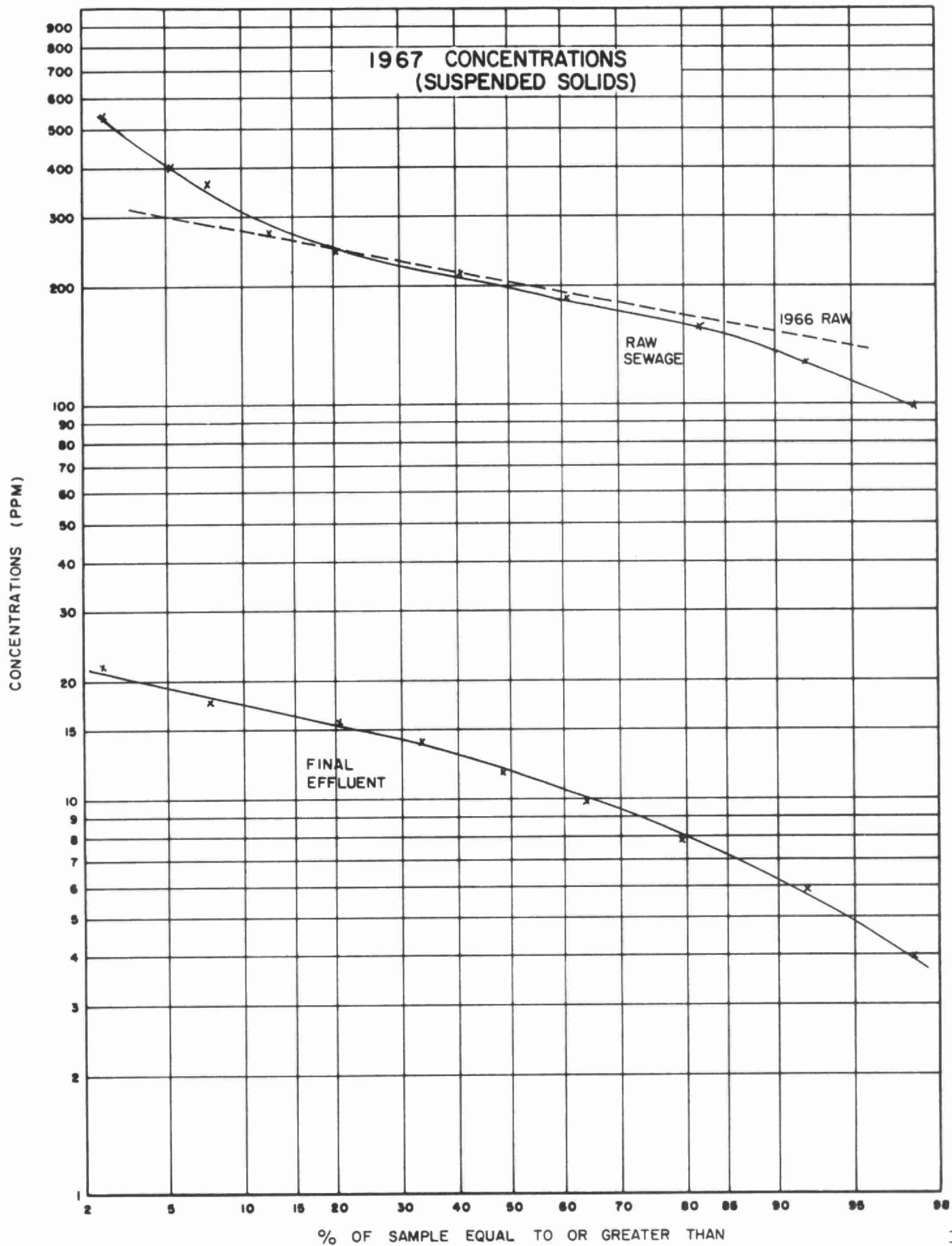


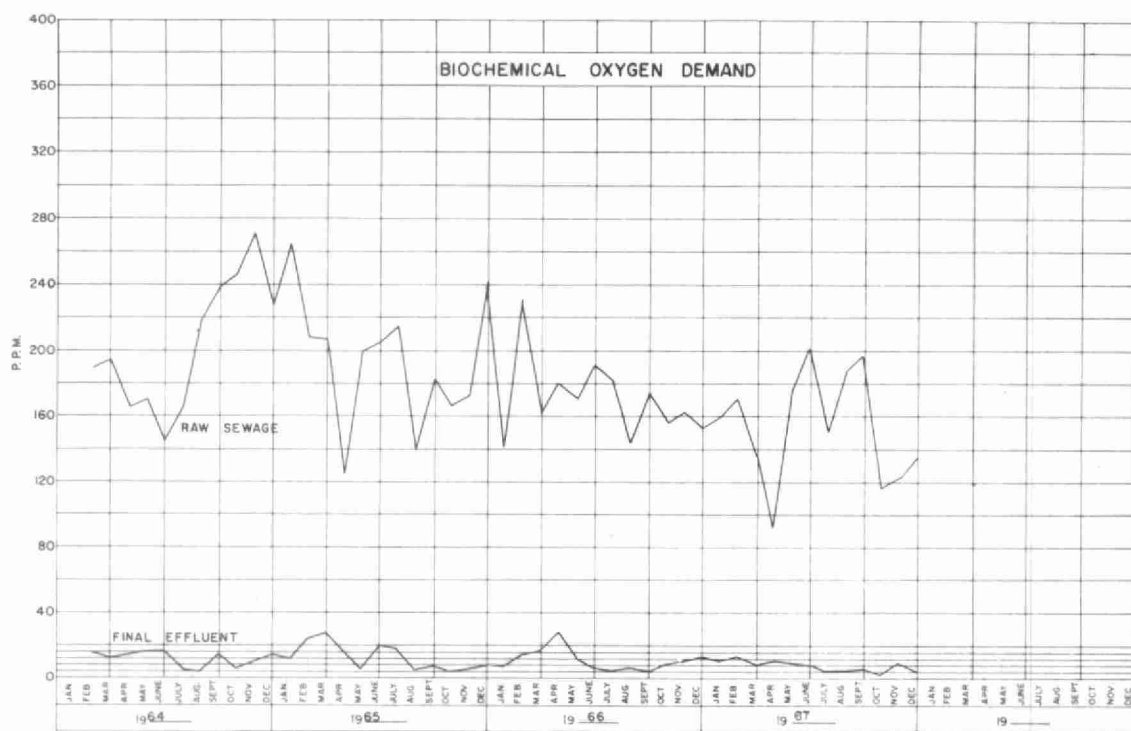
FLOW DATA

Month	Total Flow (MG)	Avg. Daily Flow (MGD)	Max. Daily Flow (MG)	Min Daily Flow (MG)
January	3. 271	. 106	. 138	. 084
February	2. 731	. 098	. 191	. 073
March	4. 179	. 135	. 253	. 087
April	4. 107	. 137	. 214	. 098
May	3. 818	. 123	. 141	. 102
June	4. 027	. 134	. 199	. 101
July	3. 644	. 118	. 166	. 056
August	2. 694	. 087	. 169	. 056
September	2. 770	. 092	. 128	. 074
October	3. 386	. 109	. 181	. 071
November	3. 574	. 119	. 196	. 080
December	4. 285	. 138	. 266	. 088
Total	42. 486			
Average	3. 540	. 116		

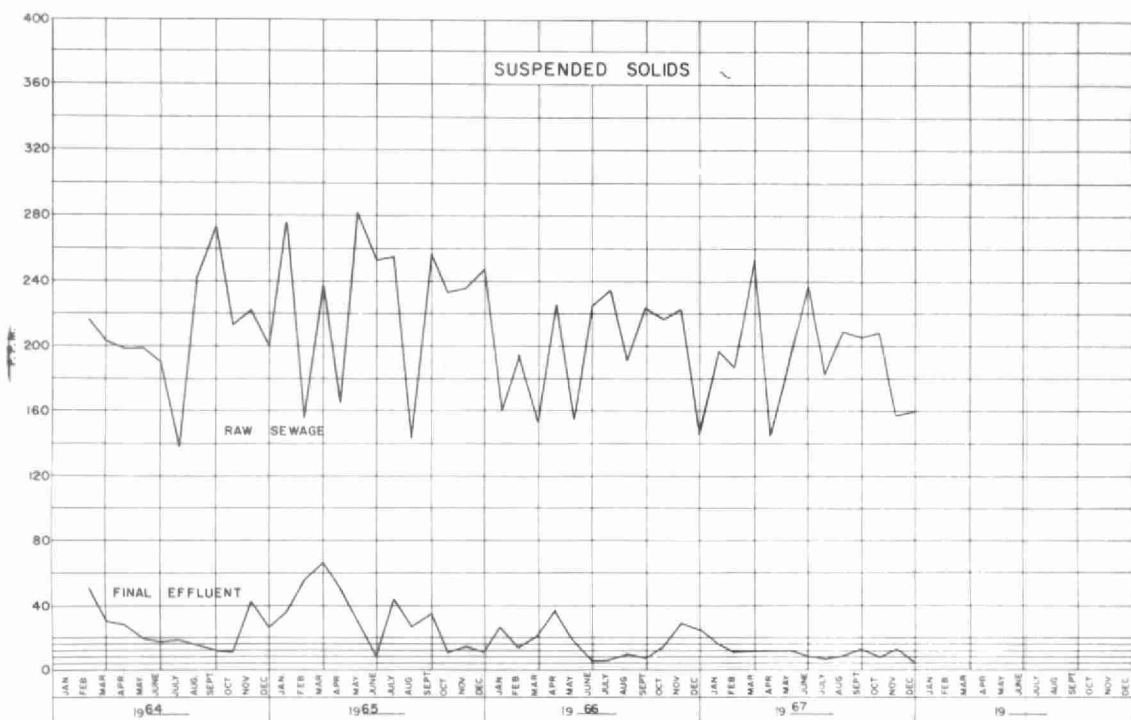








MONTHLY VARIATIONS

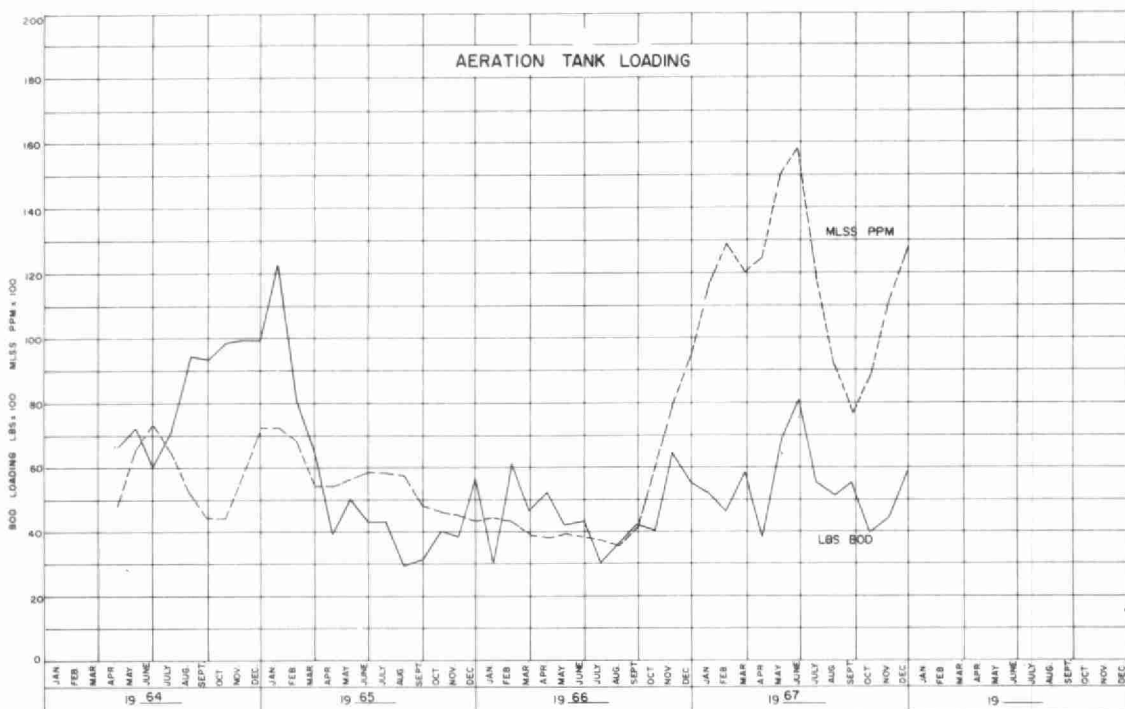
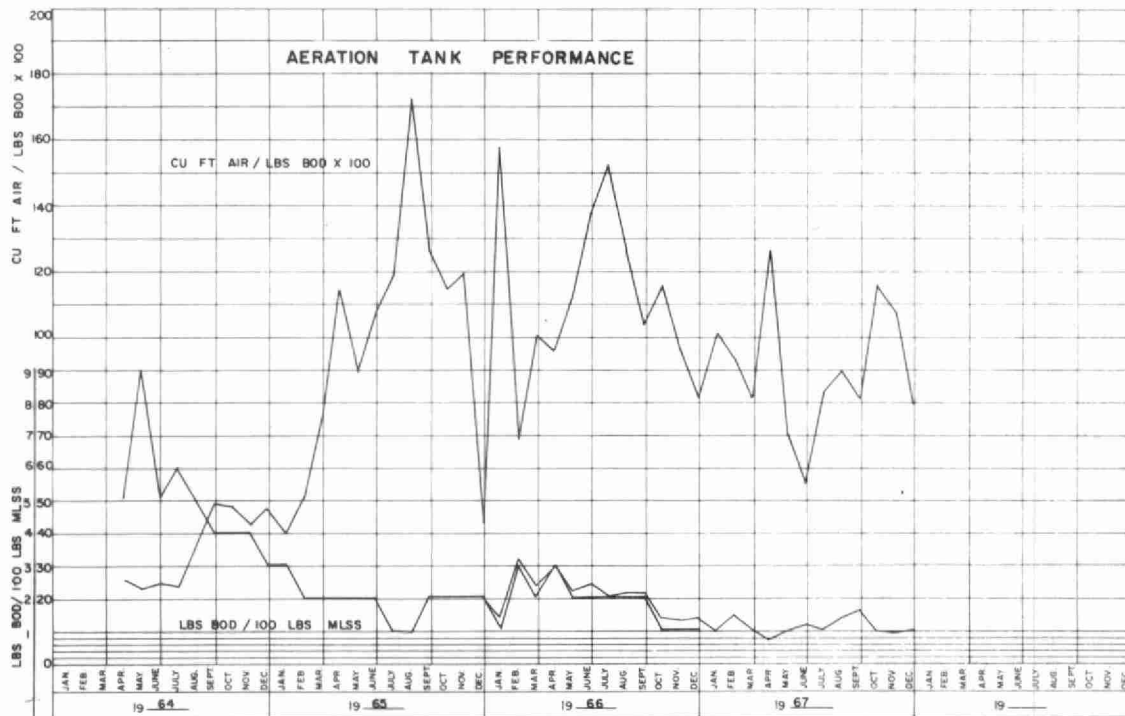


GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	159	9.3	94.2	2.45	198	16	91.9	2.98	25
FEB.	170	11.2	93.4	2.17	187	10	94.6	2.42	24
MAR.	138	6.9	95.0	2.73	253	11	95.7	5.06	24
APR.	92	9.2	90.0	1.70	145	12	91.7	2.73	23
MAY	175	8	95.4	3.19	194	11	94.3	3.49	19
JUNE	201	7	96.5	3.90	238	8	96.6	4.63	12
JULY	151	3.6	97.6	2.68	183	6.5	96.4	3.22	12
AUG.	188	3.3	98.2	2.49	209	8	96.2	2.71	6
SEPT.	198	4.2	97.9	2.68	206	12	94.2	2.67	9
OCT.	116	1.3	98.9	1.94	209	7	96.6	3.42	13
NOV.	122	8.3	93.2	2.03	158	12	92.4	2.61	8
DEC.	135	3	97.8	2.83	160	4	97.5	3.34	10
TOTAL	-	-	-	30.79	-	-	-	39.28	185
AVG.	154	6.3	95.7	2.67	195	10	94.8	3.27	15

COMMENTS

There has been a slight decrease in the strength of the raw sewage from 1966 when the BOD averaged 170 ppm and the suspended solids averaged 196 ppm. The effluent quality has improved greatly over the 1966 values of 9 ppm BOD and 18 ppm SS. The percent reduction improved accordingly. The grit removal in 1967 increased over 1966 values and reflects the increase in flows.



AERATION SECTION

MONTH	* PRIM. EFFL B.O.D. PPM.	ML.SS. PPM.	LBS. BOD. PER 100 LBS. M. L. S. S.	CUBIC FEET AIR PER LB. BOD. REMOVED
JANUARY	159	11613	0.94	10069
FEBRUARY	170	12843	1.4	9290
MARCH	138	12019	1.0	8135
APRIL	92	12427	0.66	12632
MAY	175	14961	0.93	6957
JUNE	201	15840	1.1	5517
JULY	151	11910	0.97	8275
AUGUST	188	9148	1.28	8944
SEPTEMBER	198	7707	1.52	8090
OCTOBER	116	8800	0.93	11520
NOVEMBER	122	11057	.85	10667
DECEMBER	135	12523	.97	7912
TOTAL	-	-	-	-
AVERAGE	154	11737	1.05	9001

* Raw BOD. No primaries.

COMMENTS

In 1967 the efficiency of the plant was increased due to the operation of the aeration section at a higher mixed liquor concentration. The effluent quality and reduction efficiency improved. The average effluent suspended solids was reduced below the Commission objective. Although the plant is operating at high mixed liquor suspended solids the results are very favourable.

There has been a 20% decrease in the air used per lb. of BOD removed over the 1966 value. This is due to the increase in lb. of BOD and flows with no recorded increase in cubic feet of air and also elimination of the use of the aerobic digester.

DIGESTER OPERATION

Month	Sludge to Holding Tank Gallons	Sludge to Truck Gallons
January	-	-
February	10,000	6060
March	-	-
April	-	-
May	-	-
June	70,000	12120
July	110,000	6060
August	45,000	-
September	20,000	-
October	40,000	6060
November	20,000	-
December	10,000	9090
Total	325,000	39390
Average	27,083	3280

COMMENTS

Due to the increased MLSS the waste sludge production was reduced and the holding tank was sufficient for waste sludge storage. The holding tank contents are aerated and occasionally thickened by decanting. The final disposal was achieved by tank truck when required.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	3.271	155	4.74
FEBRUARY	2.731	140	5.13
MARCH	4.179	155	3.71
APRIL	4.107	150	3.65
MAY	3.818	155	4.06
JUNE	4.027	150	3.72
JULY	3.644	155	4.25
AUGUST	2.694	155	5.75
SEPTEMBER	2.770	150	5.42
OCTOBER	3.386	155	4.58
NOVEMBER	3.574	150	4.19
DECEMBER	4.285	155	3.62
TOTAL	42.486	1825	-
AVERAGE	3.540	152	4.40

COMMENTS

Chlorination of the final effluent is carried out 12 months of the year. An average of 152 lbs. of chlorine per month was required (representing an average dosage rate of 4.40 ppm) to maintain a residual of at least 0.5 ppm. A check on the 15-minute residual is impossible at this plant since the plant was constructed without a chlorine contact chamber. The end of the outfall is not accessible for sampling.

LABORATORY LIBRARY



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CONCLUSIONS

During the past year, the efficiency of treatment was greatly improved. Sludge disposal was handled by tank truck. The structures, equipment and grounds were well maintained during the year and no serious break-downs were encountered. A local garage was rented to store plant equipment.

Date Due

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Ontario Water Resources Co
Township of Moore
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Etobicoke, Ontario M9P 3V6
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